

Border Power Plant Working Group
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Grupo de Trabajo de Termoeléctricas Fronterizas
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February 5, 2003

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California Energy Commission
1516 Ninth Street
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Subject: Palomar Energy Project, Docket No. 01-AFC-24, Comments for February 7, 2003 Workshop on Air Quality and Visual Resources Issues Raised in FSA

Dear Public Advisor Mendonca:

I recently had the opportunity to read the January 25, 2003 Final Staff Assessment for the Palomar Energy Project. I will not be able to attend the air quality and visual resources workshop on February 7th. For this reason I am submitting written comments on substantive issues of concern I have with the FSA. My comments are organized by section and page below.

Air Quality, pg. 4.1-8

Table 1 indicates a California annual geometric mean PM₁₀ standard of 30 µg/m³. This is incorrect. The Air Resources Board approved a revised “annual arithmetic mean” PM₁₀ standard of 20 µg/m³ on June 20, 2002. This standard will take effect upon final approval by the Office of Administrative Law. Final approval is expected this month (February 2003).

The average annual arithmetic mean PM₁₀ concentration at the Escondido East Valley Parkway from 1999 to 2001 is 30 µg/m³ (see Table 4 on 4.1-11). The Escondido East Valley Parkway monitoring station is the closest air district PM₁₀ monitoring station to the proposed Palomar Energy Project (PEP). It would appear that major PM₁₀ reduction measures will be necessary if Escondido is ever to approach attainment with the 20 µg/m³ standard. One straightforward step would be eliminating PM₁₀ emissions from the cooling towers by using dry cooling at the site. The fundamental argument is that dry cooling represents Lowest Achievable Emission Rate (LAER) technology for PM₁₀ from the cooling system at this site. Non-attainment areas typically require LAER and offsets for non-attainment pollutants.

Air Quality, pg. 4.1-11

The statement is made that:

“ . . . on most days with high PM_{10} concentrations, there is a greater presence of nitrate (NO_3^-) than ammonium (NH_4^+). . . . if additional ammonia is available then ammonia nitrate particles would be more likely to form. . . . Because there is limited availability of sulfates, the CARB believes that ammonium nitrate is generally the largest contributor to wintertime $PM_{2.5}$ mass at urban sites in California.”

The ammonium nitrate formation reaction in the local area is essentially “ammonia limited.” This means that ammonia emitted by the cooling tower is likely to contribute to additional $PM_{2.5}$ and PM_{10} burden in Escondido. Given Escondido is non-attainment by a large margin with the $20 \mu g/m^3$ annual PM_{10} standard, dry cooling offers a common sense option to eliminate both the PM_{10} burden generated by cooling tower drift and ammonium nitrate formed by atmospheric reaction with between nitrate and ammonia stripped from the circulating cooling water.

Public Health, 4.7-17

It is stated that the ammonia concentration in the cooling tower exhaust at the Russell City Energy Center in Hayward is estimated at 4 ppm, and that the drift rate for this site is estimated at 338 lb/hr. This data has nothing to do with ammonia stripped from the cooling water and emitted as a gas from the tower. The Russell City data indicates the estimated ammonia concentration in the cooling water is 4 mg/l. Aerosol droplets exit as drift at a rate of 338 lb/hr. Ammonia is present in the aerosol droplet at a concentration of 4 mg/l. The end result is that ammonia is emitted as a component of the drift droplets at a rate of 0.0059 tons per year. This calculation ignores ammonia stripping mechanism completely, and should in no way be used to dismiss the significance of the ammonia stripping mechanism in the cooling tower.

Soil & Water Resources, pg. 4.9-6

The secondary treatment wastewater that will be used to produce tertiary treated reclaimed water at the HARRF consistently exceeds both the ammonia concentration and pound per day limits established for HARRF secondary treated wastewater. The tertiary treatment process will not remove ammonia. Ammonia is not addressed in Soil & Water Resources Table 1. These exceedances of both the ammonia concentration and pound per day limits should be considered violations of LORS by the CEC. The high ammonia concentration in the reclaimed water will directly result in additional ammonia stripped to atmosphere in the cooling tower and the formation of additional secondary ammonium nitrate particulate.

Soil & Water Resources, pg. 4.9-11, Alternative Cooling Methods

The rationale for advocating dry cooling at this site is to minimize PM₁₀ and ammonia (and secondary ammonium nitrate PM₁₀) emissions from the cooling tower, and to allocate reclaimed water for purposes that require water and reduce regional dependency on Colorado River water imports. These are the core, substantive issues when discussing cooling system alternatives. The cooling analysis focuses almost exclusively tactical cost-benefit calculations to justify the applicants assertion that wet cooling will be less expensive over the life of the project, and by extension good for the community and California.

I disagree with a number of the assumptions in the CEC cost analysis, and will present my case during the evidentiary hearings. The PEP will compete in the same market as the Otay Mesa Project, which will use dry cooling. The PEP will also compete in the same regional market as 5,000 MW of dry-cooled combined cycle power plants in operation or under construction in the Las Vegas area. One of these projects is Sempra Energy's 480 MW El Dorado facility. Clearly the deregulated power industry does not see any technical or cost hurdles to using dry cooling and competing in a deregulated power market. Escondido is out of attainment by a large margin with the California annual PM₁₀ standard. An air-cooled condenser (ACC) will emit no PM₁₀. The cooling towers will use reclaimed water that violates LORS for ammonia concentration and quantity. A portion of this ammonia will be stripped in the cooling tower and ultimately form ammonium nitrate particulate. Use of dry cooling will eliminate this additional particulate burden.

Reclaimed water at a rate of 3,600,000 gallons per day will be diverted from uses that would decrease our regional dependency on the Colorado River, which is currently one of the biggest political controversies in California and the West, and instead sent to the PEP for evaporation and conversion into brine. This provides the City of Escondido with a comfortable revenue stream while undermining the region's strategic efforts to reduce our dependency on the Colorado River. Sending HARRF reclaimed water to the PEP does not reduce the region's dependency on Colorado River water by a single gallon, as fresh water could not be used by the PEP per SWRCB Policy 75-58. It also inhibits the region from developing beneficial reclaimed water projects by diverting 3,600,000 gallons per day of reclaimed water for the foreseeable future to a process that has viable options to water. Dry cooling would reduce PEP water consumption by over 95 percent.

It is not appropriate for the CEC to "*commend the applicant for proposing the use of reclaimed water that would minimize the use of fresh water during the construction and operation of the PEP*" (pg. 4.9-19, Conclusions and Recommendations). Policy 75-58

essentially prohibits the applicant from using fresh surface water for cooling, and fresh surface water is the only water option the applicant has other than reclaimed water. The applicant also has ample numbers of paid advocates without the CEC weighing-in in what should be a neutral cooling alternatives analysis.

Soil & Water Resources, Appendix A, pg. 4.9-A31, Visibility

CEC staff compare what could be considered a “worst case” ACC height of 100 feet to the plume abatement cooling tower height of 55 feet. The applicant has indicated that the cooling tower will have a height of 65 feet, and that under certain high relative humidity conditions a vapor plume up to 40 feet high will be visible. The total “effective height” of the plume abatement cooling tower will be over 100 feet under certain atmospheric conditions. An ACC optimized for height would have a total height of 70 to 75 feet.

There is ample room at the PEP site to optimize the ACC for height and noise. A comprehensive dry cooling analysis should be conducted by the CEC prior to the evidentiary hearings that includes an ACC for PEP that is optimized for height and noise, similar to the ACC specified for the Otay Mesa Project. There is a major difference between including an ACC analysis from the perspective of justifying why it should not be required to conducting an optimization analysis for the same system.

Visual Resources, pg. 4.12-21

CEC consultant Michael Clayton verbally committed to me during the PEP workshop in Escondido in September 2002 that he would include a photo-simulation of the plume abatement tower with a 40-foot vapor plume in the FSA. It is not there. Instead, reference is made to a modeling analysis that was conducted by staff that showed the plume would be visible less than 10 percent of the “seasonal daylight no rain/no fog” hours. The applicant actually indicated 5 percent in the applicant’s submittal to the CEC on this issue six months ago.

The text indicates that 10 percent is the significance threshold, and as such the project plumes will not result in significant visual impacts. No reference is given to justify this significance criterion.

I request that the CEC prepare a photo-simulation of the plume abatement tower with 40-foot plume for the evidentiary hearings. I also request that the CEC prepare a photo-simulation of a height-optimized ACC for the PEP site. Finally, I request that the photo-simulations be taken from a vantage point sufficiently close to the PEP site that you can make a qualitative judgement of the visual impact. A candidate vantage point is KOP-3

Roberta Mendonca, Esq.
February 5, 2002
Page 5 of 5

from the AFC, though the tree needs to be removed from the scene so that the viewer can see the cooling tower or the ACC.

I hope the workshop goes well on Friday. Please call me at (619) 295-2072 if you have any questions about this FSA comment letter.

Sincerely,

Bill Powers, P.E.
Chair, Border Power Plant Working Group

cc: Bob Eller/CEC